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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of: **TOKUDA, Kazuhiko**

Group Art Unit: 3729

Serial No.: 09/928,441

Examiner: **Rick Kiltae Chang**

Filed: **August 14, 2001**

P.T.O. Confirmation No.: 8352

For: **A METHOD OF FORMING WIRING LINES ON A  
BOARD TO FORM A CIRCUIT BOARD**

**SUBMISSION OF APPEAL BRIEF**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

February 3, 2005

Sir:

Submitted herewith is an Appeal Brief in the above-identified U.S. patent application.

Also enclosed is a check in the amount of **\$500.00** to cover the cost of filing this Appeal Brief. In the event that any additional fees are due with respect to this paper, please charge Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, KRATZ, QUINTOS,  
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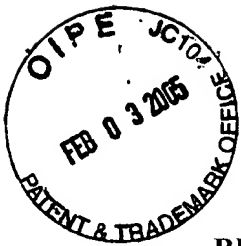
WGK/nrp  
Atty. Docket No. **000958A**  
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Enclosures: Appeal Brief; and check for \$500.00



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**BRIEF ON APPEAL**

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**I. REAL PARTY IN INTEREST**

The real party in interest is Fujitsu Limited, the assignee of the present application.

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## **II. RELATED APPEALS AND INTERFERENCES**

There are no related appeals or interferences.

### **III. STATUS OF CLAIMS**

There are 38 claims in the application which stand as follows:

Claims 1-32 (canceled)

Claims 33-36 (withdrawn)

Claims 37 and 38, as amended July 27, 2004, are finally rejected.

#### **IV. STATUS OF AMENDMENTS**

There is no amendment filed after the date of Final rejection, i.e., after September 7, 2004.

## **V. SUMMARY OF THE CLAIMED SUBJECT MATTER**

The only independent claim on appeal, claim 37, is to a method of forming a plurality of wiring lines on conductive material on a board, that has a core layer, to form a printed circuit board. The method requires forming the plurality of wiring lines (44a to 44d - FIG. 5B to 5D) on a surface of the core layer (36), having first and second portions (210 and 220: FIG. 2B) with the plurality of wiring lines formed on the surface of the core having side walls of a uniform thickness in height relative to the surface of the core layer (H6: FIG. 5B). A first portion of a first of the plurality of wiring lines 44c and 44d is etched, such that the first portion has a planar surface completely across the first portion, joining the side walls, and is thinner in height (H7: FIG. 5D) relative to the surface of the core layer than the second portion, such that cross-talk noise between adjacent two wiring lines is reduced.

## **VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

Claims 37-38 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S.

Patent No. 4,701,363 (Barber) in view of U.S. Patent No. 5,757,069 (Seo et al.).

## VII. ARGUMENT

Neither the Barber or Seo et al., alone or their combination, teach or suggest the present claimed method.

The Examiner alleges, in the Final Office Action, that FIG. 7 of Barber shows etching to form depressions 25 on leads and that FIG. 9 shows a planar portion 43, while admitting that the planar portion 43 does not extend completely across the first portion to join side walls. The Examiner then alleges that: “Barber inherently discloses in FIG. 7 that the air gap between the leads reduce cross-talk since air has a very low dielectric contrast”. Then, Seo et al. is cited to show in FIG. 2 etching 12 to form a planar surface completely across to join the side walls. What the Examiner completely ignores is the fact that Barber intentionally produces a U-shaped structure to provide improved stiffness for a thinned web, while the Seo et al. purpose is to provide a semiconductor lead frame and packaging method to improve adhesion between a lead frame and an insulating adhesive film.

Why would one be led to combine these diverse teachings in absence of first reviewing Applicants’ specification?

The Barber reference structure specifically requires a structure of a U shape, with a web section 36 where the etching process “provides a unique channel beam configuration for the web cross section, as shown in FIG. 9...” (Col. 9, lines 20-23), the purpose of which is to provide improved stiffness for the thinned web. The Examiner alleges that it would be obvious “to modify Barber by etching the lead to form a planar surface completely across to join the side walls.” (Final Office Action, Page 2). Why would it be obvious to form a planar surface



completely across the Barber device when he states that the channel beam configuration is specifically necessary?

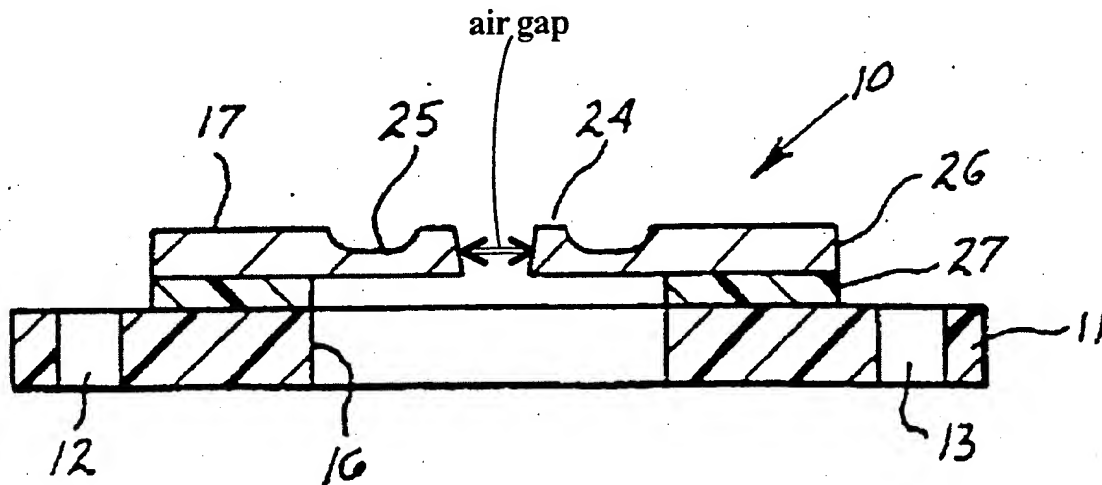
In this instance, the Examiner has disregarded, redefined or reconstructed the process of Barber in alleging obviousness of Applicant's claimed method.

In this instance, the Examiner has erred, as stated by the Court in W.L. Gore & Associates, Inc. v. Garlock, Inc., 220 U.S.P.Q. 303 (Fed. Cir. 1983) at page 311; "...in considering claims in less than their entireties, Shenck, supra; and in considering the reference in less than their entireties, i.e., in disregarding disclosures in the references that diverge from and teach away from the invention at hand. In re Kuderna, 426 F. 2d. 385, 165 U.S.P.Q. 575 (CCPA 1970)."

With respect to the Examiner's allegation that Barber inherently discloses in FIG. 7 that an air-gap between the leads reduces cross-talk noise, Applicant would respond as follows.

According to the present invention, to form wiring lines to be thinner means to reduce the thickness of the wiring lines arranged on the circuit board, that is, to set the area  $S_m$  where the wiring lines face to each other per unit length of the wiring line (see the present specification at lines 12-17 of page 3, lines 7-11 of page 6, lines 21-24 of page 6, line 35 of page 8 to line 14 of page 19, and line 35 of page 10 to line 13 of page 11).

Referring to FIG. 7 of Barber, the cross-talk occurs in an air gap. However, the depression 25 has no affect in reducing the cross-talk due to the bump 24 since both facing surface areas (corresponding to  $S_m$  of the present invention) of the metal foil layers 26 are not adjusted by the depression 25.



**FIG - 7**

The Seo reference merely shows a plating groove 15 preferably formed by a pressing process or a half etching process. The purpose of Seo is to form a plating groove on the upper surface of on end portion of a lead frame and set a plating layer in the plating groove to eliminate the height difference and uniformly distribute the pressing force during adhesion of an insulating film.

As discussed above, Applicant does not believe that one skilled in the art would be led to combine the disparate teachings of Barber and Seo, absent first reviewing Applicant's specification. It appears that there is no suggestion or motivation in either of the references to modify either reference or combine their teachings to arrive at Applicant's claimed method.

There is no suggestion in the Seo reference that would lead one to combine the teachings of that reference with Barber. Absent an initial review of Applicant's specification, one skilled in the art would not be led to combine Seo with Barber. As the U.S. Court of Appeals Federal Circuit stated in In re Rouffet, 47 USPQ 2<sup>nd</sup>, 1453: "... this court requires the examiner to show a motivation to combine the references that create the case of obviousness." and "... this court forbids the use of hindsight in the selection of references that comprise the case of obviousness."

There is simply no teaching or suggestion in either reference that use of Applicant's method would produce a high-density printed circuit board with reduced crosstalk noise between adjacent two wiring lines. Barber merely teaches a process for step etching a metal tape adapted for use in tape automated bonding, while Seo teaches a semiconductor packaging method where the assembly process uses a tape adhesion method with uniform pressing forces to prevent non-adhesion portions.

Absent Applicant's disclosure, one would not be led to combine these disparate teachings with an expectation that a high-density printed circuit board could be produced having reduced crosstalk noise between adjacent two wiring lines. There is no teaching of suggestion in either of the two references that they could or should be combined.

It is known that merely because prior art may be modified to make it more closely resemble a claimed invention does not render the invention obvious unless the prior art suggests the desirability of such a modification. As stated in In re Fritch, 23 U.S.P.Q. 2d, 1780 (Fed. Cir. 1992); "It is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious."

In view of the above, the Examiner should be reversed and Claims 37 and 38 passed to issuance.

In the event this paper is not timely filed, appellant hereby petitions for an appropriate extension of time. The fee for any such extension may be charged to our Deposit Account No. 01-2340, along with any other additional fees which may be required with respect to this paper.

Respectfully submitted,

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Enclosure: Appendix

## APPENDIX

Claim 37 (previously presented): A method of forming a plurality of wiring lines on conductive material on a board having a core layer to form a printed circuit board, comprising:

- (a) forming said plurality of wiring lines on a surface of said core layer, having first and second portions, the plurality of wiring lines formed on said surface of said core having side walls of a uniform thickness in height relative to said surface of said core layer; and
- (b) etching the first portion of a first of said plurality of wiring lines, such that the first portion has a planar surface completely across said first portion, joining said side walls, and is thinner in height relative to said surface of said core layer than the second portion, such that cross-talk noise between adjacent two wiring lines is reduced.

Claim 38 (previously presented): The method as claimed in Claim 37, wherein a second of said plurality of said wiring lines is provided, spaced from said first wiring line of said plurality of wiring lines having said first and second portions, said second wiring line having third and fourth portions, and etching said second wiring line such that the third portion is thinner in height relative to said surface of said core layer than the fourth portion.